Positivity and Well-being Among Community-Residing Elders and Nursing Home Residents: What Is the Optimal Affect Balance?

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Objectives: To explore whether a ratio of positive to negative affect, from the work of Fredricksen and Losada, could predict high levels of well-being in elderly samples and especially in nursing home residents despite multiple chronic health conditions, consonant with Ryff and Singer’s notion of “flourishing under fire.”

Method: We used two samples: a probability sample of community-residing elders and a sample from nursing homes. We calculated ratios of positive to negative affect in each sample and measured well-being with social interaction, mental health, life satisfaction, and general well-being.

Results: The positivity ratio of 2.9 differentiated high levels of well-being in both the samples, as in previous research on younger samples.

Discussion: Although we expected the positivity ratio to perform less well among nursing home residents, we found that it differentiated residents with high well-being just as well as in the community sample. The ability to regulate positive affect to maintain a relative ratio of positive over negative affect appears to be an important aspect of successful adjustment in late life. Further research is needed on objective indicators of quality of life and on whether intra-individual shifts in affect balance are coupled with shifts in indicators of positive mental health.

Key Words: Emotion/emotion regulation—Long-term care—Nursing homes—Successful aging—Well-being.

The emergence of a positive psychology movement in the past decade has pushed researchers to consider not only the presence or absence of mental illness as a criterion for successful living but also the gradations of well-being. Keyes (2007), for example, has advocated a definition of mental health that includes not only the absence of mental illness but also the presence of positive adaptive behaviors, emotions, and functioning. Park and Peterson (2009) have argued that psychology should move from merely solving problems to understanding “what it means to live well and how to encourage and maintain such a life” (p. 422). With the interest in defining mental health as something more than an absence of problems, there has been an increased focus on the importance of positive affect and the role of balance between positive and negative affect in predicting well-being. Fredrickson and Losada (2005) posited a positive-to-negative affect ratio of 2.9 that consistently distinguishes flourishing from languishing across a variety of research samples, including married couples, business teams, and individuals. They defined flourishing broadly as living “within an optimal range of human functioning,” (p. 678), measured in terms of social function and life satisfaction, self-acceptance, and purpose in life. Positivity indices taken from their work and others’ involve dividing the number of positive emotions reported in a particular situation or time series, or the number of positive interactions observed, by negative emotions reported or observed. In short, their work suggests that in a variety of populations, this broad notion of well-being may be identified and predicted when positive affect scores are 2.9 times greater than negative affect scores. We know of no published work that extends this way of understanding well-being to older adults. We set out to address this gap in a preliminary exploration using existing data sets that included measures of self-rated psychosocial well-being, quality of life (QoL), and life satisfaction, measures that, at the high end of their scales, capture at least part of the well-being construct as defined by Fredrickson and Losada. We were also interested in whether frail elders who find themselves in long-term care settings because of chronic illness could be defined as having high well-being despite physical disabilities.

Keyes (2007) has argued that measures of mental health and mental illness form two distinct and independent dimensions. Thus, the absence of mental illness is not equivalent to the presence of mental health. Keyes outlined 13 dimensions of positive mental health, divided into positive emotions (positive affect and stated QoL), positive psychological functioning (self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, and positive relations with others), and positive social functioning (accepting of others, optimistic views of others, contributes to society, seeing society as meaningful and coherent, and
sense of belonging; Keyes, 2005, 2007). Keyes’ (2005) work using the MacArthur Foundation Midlife in the U.S. study supported a two-factor structure of mental health/mental illness measures. Factor analyses of these dimensions resulted in two common factors, one labeled hedonic well-being defined by positive emotions and the other labeled eudaimonic well-being defined by psychological and social functioning. In Keyes’ definitional framework, flourishing individuals must exhibit high levels in at least one indicator of hedonic well-being (e.g., positive affect or perceived QoL) and at least 6 of 11 measures of eudaimonic well-being. Conversely, low mental health, which he labeled languishing, was defined as exhibiting low levels on at least one indicator of hedonic and six indicators of eudaimonic well-being. Studies have estimated the prevalence of mental health, according to this definition, to be approximately 20% in American adults (Keyes, 2007). Keyes (2005, 2007) presented convincing data that languishing is hardly a benign condition but rather is associated with negative outcomes such as higher levels of physical disability, fewer days of work, and poorer relationship quality. Moderate mental health, the category that includes most Americans, captures those who fit neither flourishing nor languishing criteria.

Many of the concepts included in Keyes’ definition of mental health have enjoyed a long and distinguished history of study within gerontology. These concepts have been studied independently in gerontology as social support, social networks, life satisfaction, well-being, and so on. Distinctions between successful and normal or usual aging (e.g., Baltes & Baltes, 1990) are similar to Keyes’ distinction between flourishing and moderate mental health. Keyes and his colleagues share with researchers interested in successful aging a concern for optimizing adaptation rather than simply treating or preventing mental illness, and this work implies that the study of well-being in late life must include examination of the gradations of moderately well and very well.

Fredrickson’s Broaden-and-Build theory focuses on affect balance as an essential promoter of functional well-being (see, e.g., Fredrickson, 1998; Garland et al., 2010). This theory posits that positive affect is an evolved capacity that, as compared with an immediate protection from harm through escape/fight/arousal that comes from negative affect, functions to broaden adaptive strategies and increase flexibility, promoting survival over the long term. Affect can be defined as the experience of emotion in the moment. The Broaden-and-Build theory contends that positive affect, although experienced only briefly, has lasting consequences, leading to benefits, including increased attention, larger behavioral repertoires, more creativity, improved immune function, and longevity. Thus, in this theory, high levels of positive affect, an indicator of hedonic well-being (Keyes, 2005), is a “key predictor” of functional, or eudaimonic, well-being (Fredrickson & Losada, 2005, p. 678). Using time series data and nonlinear dynamic modeling from a prior study of business groups, Fredrickson and Losada (2005) found support for their hypothesized cut point of 2.9 positive-to-negative affect ratio to distinguish highly functional groups from less functional groups. In addition, they provided supporting examples from cross-sectional comparisons in a variety of samples, including married couples, men being treated for depression, and non-depressed college students. In each case, those individuals defined as highly functional had mean positivity ratios greater than 2.9 and those with poor or marginal functioning had mean positivity ratios less than 2.9. We know of no published work that has extended this approach to older adults, although there is research that supports the protective function of positive affect for older adults (for a review, see Seligman, 2008). Positive affect appears to be relatively stable throughout the life span with a small decline in late life, whereas negative affect decreases across young and middle adulthood and levels off after age 60 (Charles, Reynolds, & Gatz, 2001). These findings might lead us to expect average positivity ratios to increase with age. However, negative affect is highly variable, and variability in positive affect increases with age (Charles et al., 2001), suggesting that there may be important individual differences other than age that must be accounted for understanding affect balance.

One individual difference that has particular significance in late life is a decline in health and an increase in disability. The presence of chronic disease and disability has been linked to high negative affect in the form of major and minor depression (e.g., Rothermund & Brandstädter, 2003), and older adults with more disability living in institutional care settings show higher levels of daily negative affect than those living in community settings (Lawton, Kleban, Rajagopal, & Dean, 1992). It is possible that these health-related affective changes alter the ideal affect balance ratio for older adults, particularly in institutional settings.

Keyes (2005, 2007) has demonstrated that the absence of flourishing as he defines it has a strong association with the presence of chronic physical disease diagnoses. Given the strength of this association, one might argue that older adults burdened with significant and multiple chronic illnesses and disabilities would have great difficulty meeting any definition of high well-being. However, Ryff and Singer (2003) coined the term “flourishing under fire” (p. 15) to describe the ability to respond to challenges such as major health events. Ryff and Singer argued that responding to challenge is what develops the strengths that permit sustained well-being. Thus, it may indeed be possible to maintain high levels of psychosocial well-being in the context of significant physical, and even cognitive, impairment (Braudy Harris, 2008). Fredrickson’s Broaden-and-Build theory suggests that the ability to maintain high levels of positive affect might be a key ingredient of being well in the face of these challenges.

The goal of the present study was to test the expected positivity ratio of Fredrickson and Losada (2005) using existing data sets composed of older adult samples (i.e., from
studies in which the data collection was not explicitly designed to test these hypotheses). Using two samples of older adults, a probability sample of community-residing elders with less physical impairment and a sample from several nursing homes with relatively higher levels of physical impairment, we examined the following hypotheses: (a) In line with the previous studies of adult populations, a mean positivity ratio of 2.9 will discriminate older adults with high well-being from those with low or moderate well-being in a community sample, both cross-sectionally and longitudinally and (b) given the greater presence of physical and cognitive illness and disability, a higher positivity ratio will be required to discriminate levels of well-being among older adults in a nursing home sample.

**Method**

**Samples**

**Sample 1.**—Data for Sample 1 were taken from the first and fourth waves of a prospective study of older Kentuckians conducted in the 1980s that used a geographically representative probability sample of persons aged 55 years and older (see Norris, 1985 for a description of this sample and discussion of attrition and other sample characteristics). Measures had been pretested on older adults and were found to be reliable (Himmelfarb & Murrell, 1983), appropriate, and comprehensible for older adults. The resulting sample for the first interview wave, when properly weighted, was quite similar to the U.S. population of the same age at the time, with the exception that the sample had less education. Two thirds of the U.S. population of this age had 8 years or more of education, whereas this was true for only one half of this Kentucky sample. There were 762 participants who had complete measures for the purposes of the present study. Comparative demographic data for Samples 1 and 2 are shown in Table 1.

**Sample 2.**—Participants in this sample were 48 volunteers recruited from five nursing homes in the Louisville, KY, area for a study of activity participation and positive affect. Participating nursing homes ranged in size and location (urban vs. suburban). At each site, staff members were asked to identify potential participants whom research assistants could then approach to explain the study and obtain consent. Residents received $5 for their participation in the interview. Volunteers scoring five or more errors on the Short Portable Mental Status Questionnaire (SPMSQ; Pfeiffer, 1975) were excluded; five people were excluded using this rule.

**Measures Used to Calculate Positivity Indices**

Positivity indices were calculated using continuous scales of positive and negative affect. The samples included different measures, described below, which had similar structure in that respondents were asked to rate the occurrence of five positive and five negative affective experiences.

**Bradburn Affect Balance Scale (Sample 1).**—The Bradburn Affect Balance Scale (Bradburn & Caplovitz, 1965) is a 10-item scale in a yes/no format. Positive affect consists of items indicating interest, pride, pleased at accomplishments, on top of the world, and things going your way. Negative affect includes items indicating restlessness, loneliness, boredom, depression or unhappiness, and upset by criticism. Items were answered yes or no regarding whether the respondent had experienced the affect in the past few weeks. Alpha value for the complete scale was .65 for community-residing elders and .69 for those in inpatient settings (Himmelfarb & Murrell, 1983). For the present study, each score was a count of the number of items answered yes, plus 1 to prevent scores of zero. In our sample, with the modified scoring, the alpha values were .69 and .71 for negative and positive affect, respectively. The positivity ratio derived from this scale was the positive affect score divided by the negative affect score.

**Philadelphia Geriatric Center Positive and Negative Affect Rating Scale (Sample 2).**—This scale contains 10 items, 5 for positive affect (energetic, interested, warmhearted, happy, and content) and 5 for negative affect (depressed, sad, worried, annoyed, and irritated; Lawton, Kleban, Dean, Rajagopal, & Parmelee, 1992). An examiner reads the items aloud and presents them visually at the same time (Lawton, Kleban, Dean, et al., 1992); the respondent rates the items from 1 (not at all) to 5 (very strongly) in response to the probe “how are you feeling right now?” Scores for each affect range from 1 to 25. The factor structure of this scale has been examined across several elderly and younger samples and found to be quite stable (items varied less than one point across 30 days; Lawton, Parmelee, Katz, & Nesselroade, 1996). Alpha values in our sample were .80 for both the scales.

**Measures Used to Determine Well-being**

Measures used to determine categorical placement in high and low/moderate well-being groups for each sample are described subsequently. To emphasize that the concept of well-being or high mental health is more than an absence of mental illness or average functioning, we determined our high well-being groups by using the upper (or lower depending on valence) tertile of the included measures.

### Table 1. Demographic Characteristics of the Study Samples

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample 1 (N = 762)</th>
<th>Sample 2 (N = 53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Women</td>
<td>62.5</td>
<td>44</td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td>73 (6.46)</td>
<td>74 (13.24)</td>
</tr>
<tr>
<td>Mean years of education</td>
<td>8.59 (4.04)</td>
<td>n/a</td>
</tr>
<tr>
<td>% White</td>
<td>90.9</td>
<td>92</td>
</tr>
<tr>
<td>% Married</td>
<td>52.9</td>
<td>n/a</td>
</tr>
</tbody>
</table>

*Note. n/a = not available.*
Sample 1.—We calculated indices of high well-being group membership in this larger sample in three ways. First, using combined measures of self-esteem, social support, and general well-being; second, using general well-being only; and third, using overall life satisfaction. Our ability to measure functional well-being in a way that parallels the outcome measures used by Fredrickson and Losada (2005) was limited by the use of an existing data set. Therefore, multiple measures that tapped mental health outcomes were used as the closest approximation. We refer to scores in the top tertile on our outcome measures as high well-being. Two separate scales that reflect overall mental health were also used individually as indicators of general well-being.

Self-esteem, social support, and general well-being. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a 10-item widely used scale assessing general self-esteem. Items are scored from 1 (strongly agree) to 4 (strongly disagree); scores range from 10 to 40. Alpha value for the scale has been reported to be high (.92 and .87, respectively, by Joiner, Afano, & Metalsky, 1992; Rosenberg, 1965). In our sample, a comparable alpha value of .84 was found at Wave 1, with a six-month stability of .50. Social support was measured using the 13-item Louisville Social Support Scale (Murrell, Himmelbarb, Schulte, & Norris, 1981) that included 4 items from the Phillips Social Participation Scale (Phillips, 1967) and 7 items from a scale developed by Andrews, Tennant, Hewson, and Vaillant (1978). It had an internal reliability of .82 and stability of .73 over six months in Sample 1. The General Well-being Scale is a global index of subjective distress developed for the National Center for Health Statistics Health Examination Surveys (Fazio, 1977; Miller, 1973). It consists of 18 items, the first 14 of which are scored on a 6-point scale and the last 4 of which are on 11-point scales regarding different feeling dimensions. It looks at how the respondent felt in the past month. Although the possible maximum score was 124, the highest score obtained in this sample was 106. High scores on this scale indicate lack of well-being. In a validation study, Himmelfarb and Murrell (1983) found an alpha value of .88 in a community sample and .92 in a clinical sample, and the scale significantly discriminated between clinical and community groups. In Sample 1, the alpha value was .90; six-month stability was .68.

Life satisfaction. This measure was a revised version of the Life Satisfaction Index-Z developed by Wood, Wylie, and Sheafor (1969). The version replaced the original true-false format with a 5-point response alternative from strongly agree to strongly disagree. In Sample 1, the measure had an alpha value of .81 and a six-month stability of .67.

Sample 2.—In this sample, high well-being was measured using a single multidimensional measure of QoL. The Quality of Life-Alzheimer’s Disease (QoL-AD) scale (Logsdon, Gibbons, McCurry, & Teri, 2002) was designed specifically for older adults with cognitive impairment and to incorporate multiple dimensions of QoL, including physical condition, mood, relationships, ability to participate in meaningful activities, patient’s financial situation, the self as a whole, and life quality as a whole. Respondents rate 13 items on a 1–4 scale from poor to excellent. Scores thus range from 13 to 53, with high scores indicating high well-being. Logsdon and colleagues (2002) have demonstrated that internal consistency of the scale for self-report was .84 and that the scores on the QoL-AD scale correlate in the expected ways with depression, health conditions, and functional ability. Although designed specifically for patients with AD, the scale is suitable for the broader population of the nursing home, and it has shown good internal consistency, test–retest reliability, and convergent validity with nursing home residents (Thorgrimsen et al., 2003); in our sample, the alpha value was .85. Residents scoring in the upper tertile on the QoL-AD were considered to have high well-being.

Other Measures

Sample 1.—In addition to the measures described previously, we also used the following measures for Sample 1 analyses. A self-reported index of health conditions was taken from Belloc, Breslow, and Hochstim (1971); in our sample, this measure had an internal consistency of .89 and a test–retest stability of .81 over six months. The Center for Epidemiological Studies–Depression scale (CES-D; Radloff, 1977) is a widely used and validated 20-item self-report scale of depressive symptoms. In this sample, the CES-D had an alpha value of .89 and a six-month test–retest stability of .64.

Sample 2.—Data for Sample 2 included a self-reported measure of physical function, the Physical Self-Maintenance Scale (Lawton & Brody, 1969). This is a widely used six-item scale that covers toileting, feeding, dressing, grooming, physical ambulation, and bathing. Lawton and Brody (1969) demonstrated high test–retest reliability (.96) with this scale and good interrater reliability between licensed practical nurses ($r = .87$) and between research assistants ($r = .91$). Scale scores were significantly related to physician ratings of physical functioning ($r = .62$) in a mixed sample of older adults in institutional and noninstitutional settings. Scale scores on this measure range from 6 to 30, with 30 indicating higher impairment.

Cognitive capacity was assessed with the SPMSQ (Pfeiffer, 1975). The SPMSQ is a 10-item cognitive screening questionnaire, developed for and normed on a population of adults aged 65 years and older. Test–retest reliability has been good, with coefficients of .82 and .83 with two different groups of older adults. Criteria for cognitive impairment have been established as follows: 0–2 errors—intact intellectual functioning, 3–4 errors—mild intellectual impairment, 5–7 errors—moderate intellectual impairment, and so on.
8–10 errors—severe intellectual impairment (Pfeiffer, 1975).

The Geriatric Depression Scale (GDS; Brink et al., 1982), a 30-item self-report depression screening scale developed for use with older adults, was also included. The psychometric properties of the scale are well established for a variety of settings (Hyer & Blount, 1984; Koenig, Meador, Cohen, & Blazer, 1988; Lescher, 1986; Yesavage et al., 1983). Alpha values have generally been above .90, with moderate interitem and item-scale correlations.

Results

Testing the 2.9 Index in a Community Sample

Our first hypothesis was that, in a community sample of older adults, a positivity ratio of 2.9 would distinguish individuals with high levels of well-being from those with moderate or low well-being. We first tested this hypothesis defining positivity using the Bradburn Affect Balance Scale and defining high well-being using the self-esteem, social support, and the General Well-Being Scale. Participants were considered to be high in well-being if they scored in the upper tertile of the self-esteem and social support measures and the lower tertile of the General Well-Being Scale. In this and all other attempts, we used an independent samples t test to compare the two groups. This test yielded a significant difference between the well-being groups, t(621) = 6.64, p < .001. The means are shown in the first two cells of Table 2. The 2.9 cutting score fell between the means for participants with very high well-being and the means for the other group, supporting the hypothesis derived from the work of Fredrickson and Losada (2005).

Keyes (2007) reported that approximately 20% of adult community samples were flourishing according to his definition. We were unable to utilize Keyes’ definition due to the use of existing data sets but rather used multiple measures to estimate the highest well-being for our community sample. We found only 9% scored in the highest tertile of our measures, suggestive of high well-being. However, given that Keyes found a strong positive relationship between overall mental health and years of education, one could argue that proportionally lower levels of well-being for these older adults is at least in part a result of the low education levels found in this group of community-dwelling older adults. To investigate this relationship in our samples, we created additional indices using two separate scales that reflect overall mental health, the General Well-Being Scale and the Life Satisfaction Scale. Because Keyes found 20% to be flourishing within his sample, we used a 20th percentile cutting score to divide the sample into high well-being and low/moderate well-being groups. In both cases, the t tests were significant, t(621) = 12.21 and t(184) = 9.25 (Levene’s test for equality of variances was significant for this test, F = 4.67, p = .03. Separate variance estimates were used.), respectively, p < .001. For both measures, the 2.9 cutting score continued to distinguish those in the high well-being group (20th percentile), as shown in Table 2. The two tests identified different individuals, with only 51% of those scoring very high on the general well-being scale also scoring very high on life satisfaction. Table 3 shows characteristics of people with high well-being defined on each of the three indices. The high well-being groups differed significantly from other participants for all variables except age, regardless of the criteria used to select the groups. F values for these associations ranged from 6.85 to 409.23, with all but the lowest significant at p < .001. The high well-being groups had higher education, particularly when defined using life satisfaction.

Longitudinal Test of the 2.9 Positivity Ratio Index in the Community Sample

Because we had several waves of data available to us for Sample 1, we tested the ability of the 2.9 positivity index at Wave 1 to distinguish high well-being from low/moderate well-being at Wave 4, 1.5 years later. We used a binary logistic regression in which the well-being index for Wave 1 was entered first, followed by the positivity index (dichotomized at 2.9) at Wave 1, predicting Wave 4 high versus moderate well-being. The overall model was significant, $\chi^2(2) = 57.79, p < .001$, and even accounting for well-being at Wave 1, the positivity index defined by the 2.9 positive-to-negative affect ratio was associated with well-being at Wave 4, $\chi^2(1) = 6.31, p = .012$. The coefficients for the variables in the equation are shown in Table 4.

<table>
<thead>
<tr>
<th>Definition of Well-being</th>
<th>Positivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M_{high}$ (SD)</td>
</tr>
<tr>
<td>Well-being defined by self-esteem, social support, and general well-being (top tertiles on all $3-N_{high} = 56, 7.2%$)</td>
<td>4.13 (1.58)</td>
</tr>
<tr>
<td>Well-being defined by general well-being (top 20%—$N_{high} = 121$)</td>
<td>3.80 (1.73)</td>
</tr>
</tbody>
</table>

Note. $M_{high} =$ mean group with a high level of well-being; $M_{low/mod} =$ mean for those falling below the high well-being cutoff. Means between groups significantly differed for all comparisons.
Table 3. Characteristics of High Well-being Group Defined by Three Different Indices in Sample 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Combined scales (N = 56)</th>
<th>Well-being Scale (N = 121)</th>
<th>Life Satisfaction Scale (N = 125)</th>
<th>Total sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>71.75 (5.75)</td>
<td>72.54 (5.37)</td>
<td>72.36 (6.06)</td>
<td>72.74 (6.34)</td>
</tr>
<tr>
<td>Education</td>
<td>9.70 (3.91)</td>
<td>9.79 (4.40)</td>
<td>11.17 (4.15)</td>
<td>8.85 (4.06)</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>26.66 (2.41)</td>
<td>23.62 (3.97)</td>
<td>23.49 (3.53)</td>
<td>21.24 (3.69)</td>
</tr>
<tr>
<td>Social support</td>
<td>37.36 (3.68)</td>
<td>31.68 (7.32)</td>
<td>31.06 (7.37)</td>
<td>27.66 (7.57)</td>
</tr>
<tr>
<td>General well-being</td>
<td>11.48 (6.13)</td>
<td>9.34 (4.03)</td>
<td>17.50 (11.40)</td>
<td>31.48 (18.40)</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>36.32 (5.26)</td>
<td>39.06 (2.29)</td>
<td>4.69 (4.80)</td>
<td>9.98 (8.57)</td>
</tr>
<tr>
<td>Positive affect</td>
<td>5.30 (1.89)</td>
<td>4.94 (1.16)</td>
<td>4.99 (1.13)</td>
<td>4.08 (1.55)</td>
</tr>
<tr>
<td>Negative affect</td>
<td>0.64 (1.12)</td>
<td>0.41 (0.80)</td>
<td>0.72 (1.13)</td>
<td>1.35 (1.43)</td>
</tr>
<tr>
<td>CES-D</td>
<td>3.66 (3.97)</td>
<td>3.02 (3.39)</td>
<td>4.69 (4.80)</td>
<td>9.98 (8.57)</td>
</tr>
<tr>
<td>Number of health conditions</td>
<td>0.91 (1.13)</td>
<td>0.85 (1.05)</td>
<td>1.10 (1.23)</td>
<td>1.87 (1.63)</td>
</tr>
</tbody>
</table>

Note. Combined scales defined by top tertile on self-esteem, social support, and well-being. The only variable on which groups did not differ significantly was age. CES-D = Center for Epidemiological Studies–Depression scale.

Table 4. Coefficients for Logistic Regression Predicting Wave 4 Well-being From Wave 1 Positivity

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 high well-being</td>
<td>2.336</td>
<td>0.366</td>
<td>40.641***</td>
<td>1</td>
<td>6.64***</td>
</tr>
<tr>
<td>W1 positivity</td>
<td>0.919</td>
<td>0.371</td>
<td>6.136*</td>
<td>1</td>
<td>1.68*</td>
</tr>
<tr>
<td>Constant</td>
<td>−3.575</td>
<td>0.296</td>
<td>145.962***</td>
<td>1</td>
<td>145.962***</td>
</tr>
</tbody>
</table>

Notes. df = degrees of freedom.
*p < .05. **p < .001.

Negative Affect Scale and well-being defined as the upper tertile on the QoL-AD. The groups were significantly different, t(39) = −5.33, p < .001, $M_{low/mod} = 1.63$ (SD = 0.96), and $M_{high} = 3.53$ (SD = 1.27). Thus, contrary to our hypothesis, the 2.9 positive-to-negative affect ratio differentiated high well-being from low/moderate well-being among nursing home residents in a manner similar to community-residing older adults. We show the characteristics of the two nursing home groups in Table 5; as with the community group, mean age was not different between groups; the groups differed in level of depression as measured by the GDS and also level of cognitive impairment as measured by the SPMSQ. Furthermore, the high well-being group engaged in significantly more frequent pleasant events as measured by the Pleasant Event Scale-NH (Meeks, Shah, & Ramsey, 2009) during the week prior to assessment. Interestingly, they did not differ in their physical disabilities, suggesting that in this physically disabled sample, those with high well-being were indeed "flourishing under fire (Ryff & Singer, 2003)."

**Discussion**

In the context of recent work encouraging definitions of well-being that go beyond mere absence of problems (e.g., Keyes, 2007; Park & Peterson, 2009), the work of Fredrickson and Losada (2005) specifically focused on the importance of the balance between positive and negative affect as a predictor of high well-being. We sought to test Fredrickson and Losada's ideal positivity ratio of 2.9 in two samples of older adults because we had not seen other tests of this sort in older samples. We expected to find that the 2.9 ratio would work well in older adults residing in the community who were not significantly disabled, and our findings from a large probability sample supported this expectation. For older adults living in nursing homes, however, we tested the possibility that a higher ratio would be necessary to offset the negativity associated with disability and institutionalization. This expectation was not confirmed; the difference between nursing home participants with very high well-being and those with low/moderate well-being was quite similar to what we found in our tests in the larger community sample.

Because we had the advantage of a prospective sample, we were able to examine, in the community sample, whether a 2.9 positivity ratio was related to well-being at a later time, in this case one and a half years later. This test is pertinent to the contention of Fredrickson and Losada (2005) that the positivity ratio is predictive of well-being and the implication of the Broaden-and-Build theory that high positive affect is causally related to future well-being. We found that, even controlling for well-being at the first wave, the 2.9 positivity ratio continued to be significantly related to high well-being later. This suggests that the positivity ratio confers a mental health advantage over time, either because people with a high positivity ratio are able to maintain this advantage or because the positivity ratio is related to other mental health advantages.

Table 5. Characteristics of High Well-being and Low/Moderate Well-being Groups in the Nursing Home Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>High well-being (N = 13)</th>
<th>Low/moderate well-being (N = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>72.54 (15.91)</td>
<td>75.47 (12.54)</td>
</tr>
<tr>
<td>Months in facility</td>
<td>50.62 (119.03)</td>
<td>41.47 (77.23)</td>
</tr>
<tr>
<td>Mental status (T-score)</td>
<td>53.08 (3.84)</td>
<td>56.63 (8.65)</td>
</tr>
<tr>
<td>Positive affect</td>
<td>22.00 (2.45)</td>
<td>14.61 (4.29)</td>
</tr>
<tr>
<td>Negative affect</td>
<td>7.54 (4.27)</td>
<td>11.29 (5.07)</td>
</tr>
<tr>
<td>Quality of life total</td>
<td>43.81 (4.45)</td>
<td>30.26 (4.73)</td>
</tr>
<tr>
<td>Physical self-maintenance</td>
<td>11.46 (4.20)</td>
<td>12.14 (4.33)</td>
</tr>
<tr>
<td>Geriatric Depression Scale</td>
<td>2.30 (0.95)</td>
<td>11.15 (4.92)</td>
</tr>
</tbody>
</table>

Note. *p < .05. **p < .001.
ratio or because a high positivity ratio leads to accumulation of other positive or health-producing attributes or experiences. More research is needed to examine what strategies people may use to maintain high positive-to-negative affect ratios. Behavioral activation treatments for depression, for example, directly target positive affect by increasing engagement in pleasant activities (e.g., Jacobson et al., 1996; Lejuez, Hopko, Lepage, Hopko, & McNeill, 2001; Meeks, Looney, Van Haitsma, & Teri, 2008; Teri, Logsdon, Uomoto, & Curry, 1997), and if research on these approaches demonstrates posttreatment changes in the affect ratio related to improved well-being, then there will be support for the notion that the positivity ratio can be manipulated. By using upper tertiles for our definitions of high well-being, we have demonstrated that the positivity ratio can be manipulated. By using upper tertiles for our definitions of high well-being, we have defined well-being in these samples relative to other members of the same sample, rather than against an independent standard. Thus, it could be argued that high well-being in the nursing home sample may not meet the standards of high well-being in the community sample, which is larger and more representative. The QoL-AD, from which our nursing home well-being index was derived, has a maximum score of 52. No member of the nursing home sample scored this high, but the overall QoL-AD mean score of 34.55 (SD = 7.86) in our sample falls between caregiver and patient mean reports of patient QoL as reported by Logsdon and colleagues (2002), and the mean for our high well-being group (43.81; SD = 4.45) was close to 1 SD above the mean reported for patients with the highest Mini-Mental State Examination scores in the study by Logsdon and colleagues.

In their discussion of the positivity index, Fredrickson and Losada (2005) do not discuss variability within groups, and so we do not know whether the variability we found in positivity ratios around the means of our well-being groups are typical of other studies. This is an important issue for future study, concerning how and why some people might thrive despite relatively low levels of positive affect or unusually high levels of negative affect, along with the question of whether there could be too much positivity (see Fredrickson & Losada, 2005 for comment on the latter issue).

This article was intended as a pilot exploration of the role of the positivity index in distinguishing between older adults who are doing exceptionally well and those who are not. Our use of conveniently available data sets that were not strictly comparable limits the conclusions we can draw from this “first pass.” Although the community sample was large and representative, the nursing home sample was relatively small and used different measures of both affect and QoL. The lack of comparable measures is a particular weakness in that it does not allow us to compare the overall level of well-being between the nursing home participants and those in the community to address the question of just how well those nursing home residents with high well-being scores were doing. However, our findings suggest that the 2.9 positivity index is a valid and robust indicator for older samples as it has been in other populations, even in the face of the medical and other stressors inherent in the move to institutional long-term care. As suggested by Ryff and Singer (2003), the concepts of resilience and “flourishing under fire” may provide an excellent framework for hypothesis generation for future research. How do long-term care residents burdened by greater physical and even cognitive impairments cope with these adversities? How does that coping relate to affect regulation? The ability to regulate positive affect in order to maintain a relative ratio of positive over negative affect appears to be an important aspect of successful adjustment in late life. Further study of objective indicators of QoL will be necessary to determine whether older adults with high subjective well-being in long-term care are indeed doing well compared with their peers or whether they have merely done a better job of adjusting emotionally to less-than-ideal circumstances (cf. Baltes & Baltes, 1990). It will also be important to study the balance between positive and negative affect longitudinally to determine whether intra-individual shifts in this balance are coupled with shifts in well-being. Ultimately, our understanding of the balance of positive and negative affect may have direct pertinence to interventions to promote resilience or help older adults adapt to adversity.

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